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BCStats

Dan Schrier
(250) 387-0376
Dan.Schrier@gov.bc.ca

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Electronic-Waste Recycling in British Columbia

Over the last few decades, technology has evolved at an extremely rapid pace. As a consequence of these technological advances, many types of electronic goods reach obsolescence fairly quickly and are quite often destined to end up in a landfill.

In a study commissioned by Environment Canada in 2003, it was found that approximately 86,000 tonnes of electrical and electronic equipment (including televisions, audio/visual equipment and kitchen and household appliances) were disposed of in Canada in 2002.[1] Of this amount, only about 3% was recycled, with the remainder discarded in a landfill. The projected figure for 2010, if the status quo of 3% recycled material were maintained, is for approximately 129,000 tonnes of electrical and electronic equipment to end up in landfills across the country. These figures do not even include computer and telecommunications equipment, which a separate study estimated added almost 34,000 tonnes to the trash heap in 1999.[2] To put these figures into perspective, if Canadians throw out in the neighbourhood of 160,000 to 170,000 metric tonnes of electronic goods per year, it is equivalent in weight to approximately 950 empty Boeing 747s (give or take 25 planes).

This ever increasing volume of electronic waste is troubling for a number of reasons, but the primary concerns are the waste of valuable resources and the presence of environmentally harmful toxins. Many electronic goods contain valuable materials such as copper, aluminum, gold and so forth, that can be extracted and recycled into new manufactured products. However, they also often contain toxic substances such as lead, mercury and cadmium that pose health and environmental risks when the electronic goods are dumped in a landfill or when they are improperly dismantled.

The value that can be extracted from these discarded goods and the environmental dangers they pose make them a perfect target for recycling efforts. To this end, British Columbia initiated an e-waste recycling program starting in August, 2007. The need for such a program was underlined by an Ipsos Reid study, which found that 36% of households surveyed had obsolete computers, printers or televisions in their home.[3]

British Columbia's e-waste recycling program is funded through an Environmental Handling Fee, which is assessed on the sale of designated

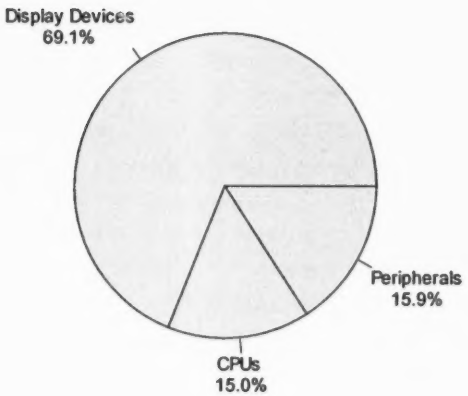
[1] RIS International Ltd in association with Five Winds International and Electro Federation Canada, *Baseline Study of End-of-Life Electrical and Electronic Equipment in Canada*, June 2003.

[2] Enviros RIS, *Information Technology and Telecommunication Waste in Canada*, October 2000.

[3] Electronics Stewardship Association of BC, *2007 Annual Report*.

electronic products. The program currently accepts televisions, computer monitors, computers, printers and other computer peripherals, such as keyboards. Based on data from the first five months of the program's operation, display devices (televisions and computer monitors) comprise the bulk of electronic items brought in for recycling. In 2007, between August and December, 69% of recycled electronics in BC were display devices. Printers and other computer peripherals comprised about 16%, with computers making up the remainder of electronic items brought to designated electronics recycling depots in the province.

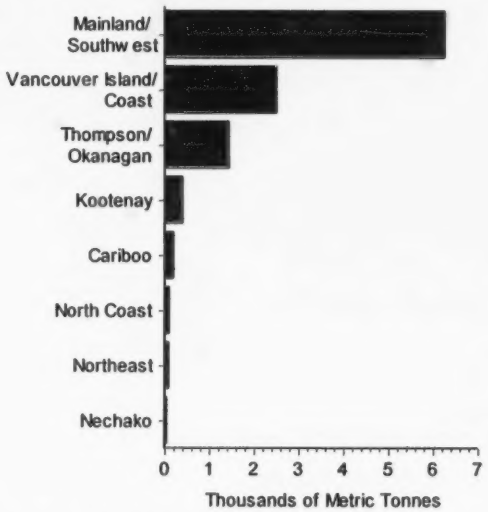
Display devices (televisions and computer monitors) made up the bulk of recycled electronics in BC in 2007



Source: Electronics Stewardship Association of BC

Over the first five months of operation, BC's electronics recycling program collected almost 2,700 metric tonnes of material. In 2008, the first full year of the program, over 11,000 metric tonnes of electronic products were recycled. The program has grown substantially in just the first year and a half, with the average monthly collection climbing from 223.7 metric tonnes in 2007 to 920.4 metric tonnes in 2008, an increase of over 300%.

In the first full year of BC's e-waste recycling program, over 11,000 metric tonnes of electronic products were recycled

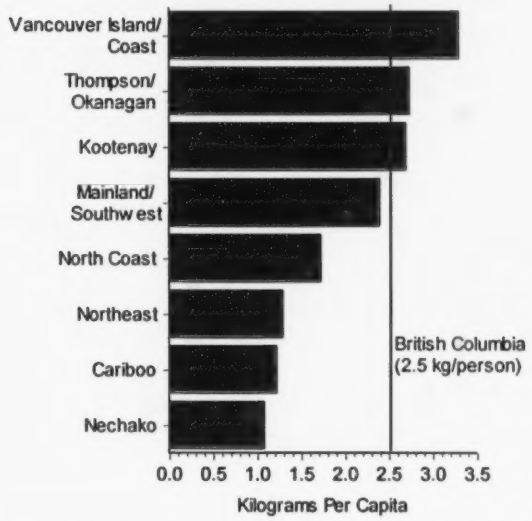


Source: Electronics Stewardship Association of BC
(Data aggregated to Development Regions by BC Stats)

The strong growth is due to a combination of factors, including a greater number of electronic recycling locations and increased public awareness of the program.

Regionally, Vancouver Island/Coast led the way in 2008, with residents of that region bringing in 3.29 kilograms of electronics for recycling per capita. Thompson-Okanagan residents recycled 2.73 kilograms per person to rank second, followed by the Kootenay region, at 2.69 kilograms per capita. These three regions were the only ones to exceed the provincial average of 2.52 kilograms per capita. While Mainland/Southwest, the region containing Greater Vancouver and the Fraser Valley, ranked fourth in per-capita diversion of electronics from landfills, at 2.39, it was the source of almost 57% of all electronics brought in for recycling in the province in 2008.

Vancouver Island/Coast recycled the most e-waste per capita in BC in 2008



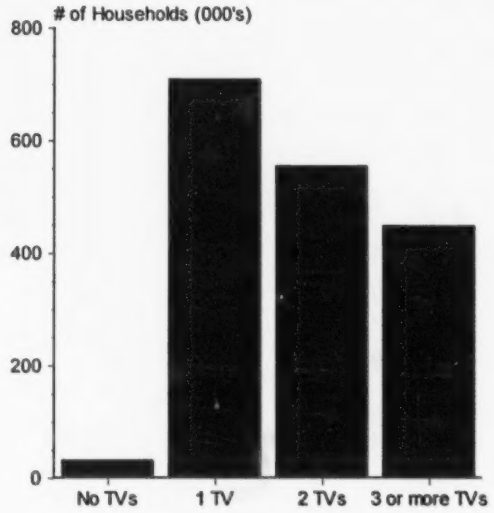
Source: BC Stats using data from Electronics Stewardship Association of BC

The regional differences can likely be attributed to a combination of things, including varying levels of access to electronic recycling locations and different degrees of awareness of the program.

Given the proliferation of electronic devices within British Columbia, it is probable that the amount of e-waste collected at designated depots in the province will continue to grow. According to Statistics Canada's Survey of Household Spending, about 84% of British Columbians owned a computer in 2007 and 98% had at least one television. With the average lifespan of a desktop computer ranging from two to five years, it is inevitable that many of those computers will reach end-of-life in the near future.

The need to recycle televisions could increase significantly after August 31, 2011 as that is the date when Canada will switch all television signals from analog to digital. While many people will likely buy converters that will allow their current analog television sets to pick up the digital signals, there will probably be a significant jump in the number of televisions getting junked. Based on the Statistics Canada survey, just over a quarter of British Columbia households owned three or more colour televisions in 2007. Another 32% had two sets. It is highly likely that a significant number of these will fall out of use once television goes digital and will be headed toward either a landfill or, preferably, to a recycling depot.

Approximately a quarter of all BC households owned three or more televisions in 2007



Source: Statistics Canada

In addition to computer equipment and televisions, there is also likely to be growth in obsolescence of other electronic equipment. For example, video cassette recorders are falling out of favour as digital video recorders become more popular and Blu-ray players are beginning to displace DVD and CD players. According to the Survey of Household Spending, over 80% of British Columbia households owned a DVD or CD player in 2007 and 79% owned at

least one VCR. Currently, British Columbia's electronic recycling program does not include these goods, but on July 1, 2010, the program will be expanded to include not only these items, but also telecommunications equipment, small appliances and some other types of electronics. Two years after that, additional items will be added to the list of recyclable electronics.

Schedule for Phasing in Other Electronic Products

Phase 1 - Complete	Phase 2	Phase 3
• Televisions • Computers • Computer monitors, keyboards, mice and other peripherals • Printers	• IT and telecommunications equipment • Small appliances • Audio-visual and consumer equipment • Lighting equipment (also captures all light bulbs including mercury-containing light bulbs) • Toys, leisure and sports equipment • Monitoring and control instruments (also captures mercury-containing thermostats) • Batteries used in Phase 2 products	• Large appliances • Electrical and electronic tools (except large-scale stationary industrial tools) • Medical devices (with the exception of all implanted and infected products) • Automatic dispensers • Batteries used in Phase 3 products
August 1, 2007	July 1, 2010	July 1, 2012

Source: BC Ministry of Environment
(http://www.env.gov.bc.ca/epd/recycling/electronics/info.htm)

The expansion of the electronics recycling program in BC will ensure that hundreds of tonnes of e-waste will be diverted from British Columbia landfills. In addition, since the recycling companies have to be approved by the Electronic Stewardship Association of BC (ESABC), which ensures that both the primary recyclers and sub-contractors handle the material responsibly, British Columbians can feel confident that their electronic trash does not end up in a developing country:

> ESABC operates in accordance with their Stewardship Plan, approved by the BC Provincial Government in November 2006, to ensure materials are diverted from landfills, processed and recycled in a manner that safeguards the environment, worker health and safety and is prevented from being exported to developing countries.[4]

This is an important guarantee as there have been instances recorded in the media of North American companies dumping electronic goods in developing countries, where both children and adults work at breaking apart the electronics to get to the material of value, but end up being exposed to toxic materials at the same time. For example, National Geographic published a report in its January 2008 issue, titled "High-Tech Trash," which chronicled the dangers posed by electronics dumped in countries such as Ghana and China. An ABC News online report dated August 2, 2009 and titled "U.S. Electronic Waste Gets Sent to Africa" also gave details of e-waste dumped in Ghana. According to that report, the environmental group Greenpeace claimed to have found computers with the label of the U.S. Environmental Protection Agency.

These reports mainly singled out companies in the United States, but a CBC News report titled "E-waste Dumping Ground," aired on October 22, 2008, gave details of Canadian companies that also engaged in this type of unethical practice, including at least one company in BC.

Given the procedures in place to audit how the electronics entering the ESABC recycling pro-

[4] Electronics Stewardship Association of British Columbia, *ESABC 2008 Annual Report*.

gram are handled, these kinds of problems should not be an issue if e-waste is brought to an approved collection facility in British Columbia. According to ESABC's 2008 Annual Report, most of the materials collected at approved "Return-It" locations are processed in either Canada or the United States, with the exception of some circuit boards, which are shipped to Belgium.

British Columbia's electronics recycling program diverted more than 13.7 million kilograms of e-waste from BC landfills from its launch in August 2007 to the end of 2008 and the amount of material brought in for recycling will likely continue to grow, particularly as the program expands to accept more types of electronics. Considering the short life span of many types of electronics, recycling programs such as the one in British Columbia have the potential to offer substantial environmental benefits as a result of removing toxins from landfills. They may also prove to be economically lucrative due to the value of the materials that can be recovered from the waste products.

TABLE 1
Metric Tonnes of Electronic Products Recycled in British Columbia

Development Region	2007*	2008	Population 2008	Kilograms Recycled Per Capita
Vancouver Island/Coast	772.4	2,514.6	764,314	3.29
Mainland/Southwest	1,371.7	6,259.7	2,614,509	2.39
Thompson/Okanagan	312.7	1,442.6	527,652	2.73
Kootenay	115.5	402.3	149,769	2.69
Cariboo	39.8	195.8	160,419	1.22
North Coast	30.9	100.4	58,243	1.72
Nechako	15.3	43.0	39,627	1.08
Northeast	25.8	86.6	67,070	1.29
British Columbia	**2,684.2**	**11,044.9**	**4,381,603**	**2.52**

* August 1 to December 31
Source: Electronics Stewardship Association of British Columbia
(Data aggregated to Development Regions by BC Stats)

TABLE 2
Growth in Electronic Product Recycling in British Columbia

	Monthly Average (Metric Tonnes)		
Development Region	**2007**	**2008**	**% Growth**
Vancouver Island/Coast	64.4	209.5	225.6%
Mainland/Southwest	114.3	521.6	356.3%
Thompson/Okanagan	26.1	120.2	361.3%
Kootenay	9.6	33.5	248.3%
Cariboo	3.3	16.3	391.9%
North Coast	2.6	8.4	224.9%
Nechako	1.3	3.6	180.8%
Northeast	2.2	7.2	235.7%
British Columbia	**223.7**	**920.4**	**311.5%**

Source: BC Stats using data from the Electronics Stewardship Association of British Columbia

TABLE 3

British Columbia Household Ownership of Selected Electronic Products, 2007

Type of Product	Estimated number of households (000)	Percentage reporting
Home computer	1,465	84.1%
Colour televisions	1,710	98.2%
1	708	40.7%
2	554	31.8%
3 or more	448	25.7%
Compact disc player	1,419	81.5%
DVD player	1,512	86.9%
Video cassette recorders	1,377	79.1%
1	955	54.8%
2 or more	422	24.2%
Cellular telephone	1,318	75.7%
1	619	35.5%
2	466	26.8%
3 or more	233	13.4%

Source: Statistics Canada